FAST FACTS
LEAD

Missouri Department of Health and Senior Services
Hazardous Substance Emergency Events Surveillance (HSEES) Program

CAS Number: 7439-92-1

DOT Numbers: N/A

DOT Designation: N/A

Exposure Levels

- Lead dust or fumes can affect you when breathed in and can irritate the nose and throat. Lead dust or fumes can irritate the eyes on contact.
- Exposure to lead can cause headache, irritability and disturbed sleep, in addition to poor appetite, weight loss, upset stomach and muscle cramps. Higher levels may cause aching and weakness in the arms and legs, and trouble concentrating and remembering things.
- Lead can accumulate in the body with repeated exposure. It can take years for the body to get rid of the excess.
- The level of exposure resulting from contact is highly variable. Children exposed to lead paint chips or contaminated soil may experience elevation in blood lead ranging from marginal to sufficiently great as to cause clinical illness.
- Adults may be exposed to hazardous concentrations of lead in the workplace, notably in lead smelters and storage battery manufacturing plants. The range of exposure is highly variable.
- Women in the workplace are more likely to experience adverse effects from lead exposure than men due to the fact that the system which forms blood in the body is more lead sensitive in women than men.

Characteristics and Potential Exposures

Lead is a heavy, soft gray metal. It has wide industrial use due to its properties of high density, softness, low melting point and resistance to corrosion. Lead powder is flammable when exposed to heat or flame. Poisonous gasses are produced in a fire.

Metallic lead is used for lining tanks, piping and other equipment where pliability and corrosion resistance are required, such as in the chemical industry in handling corrosive gasses and liquids used in the manufacture of sulfuric acid; in petroleum refining; and in halogenation, sulfonation, extraction and condensation processes. It is also used as an ingredient in solder, pigments for paints and varnishes, storage batteries, flint glass, ceramics (as a glaze), plastics and electronic devices.

Lead Releases in Missouri

During calendar years 1994-1998, 1,071 HSEES events were reported in Missouri. Of those, 19 events involved lead. Quantities released ranged from 10 pounds to 24 tons. Fixed facilities were involved in 10 of these events, while 9 occurred during transport. Two individuals were injured during one lead release. Four events resulted in the evacuation of over 100 individuals from their homes or places of work.

Interesting Event

A fire broke out in the early morning hours at a battery manufacturing facility. Approximately 10 pounds of lead were consumed in the fire. Two employees suffered from respiratory irritation and were treated on the scene. An estimated 100 employees were evacuated from the building until the fire was brought under control. The cause of the fire was not known.

Health Hazard Information

- Lead poisoning can cause poor appetite, colic, upset stomach, nausea and muscle cramps.
- Lead exposure increases the risk of high blood pressure
- Lead exposure may cause anemia, kidney and brain damage, and damage to blood cells causing anemia.
- Lead is considered a teratogen (a substance that can cause birth defects by damaging the fetus). Lead may also decrease fertility in both men and women.
- Body exposures to lead from hobbies using lead solder or pigments will increase lead levels.

- Repeated breathing or handling of leaded gasoline may also add to body lead levels.

Personal Protective Equipment Guidelines

- Avoid skin contact with lead dust and fumes. Wear protective gloves, full body clothing and headgear.
- Wear dust-proof goggles when working with lead powders or dust, unless full facepiece respiratory protection is worn.
- Where the potential exists for exposures not higher than 0.05 mg/m^3*, use a half-mask, air purifying respirator equipped with high efficiency filters.
- Where the potential exists for exposures not higher than 2.5 mg/m^3, use a full facepiece, air purifying respirator with high efficiency filters.
- Where the potential exists for exposures not higher than 50 mg/m^3, use any powered-air purifying respirator with high efficiency filters or half-mask supplied air respirator operated in positive pressure mode.
- Where the potential exists for exposures not higher than 100 mg/m^3, use supplied air respirators with full facepiece, hood, helmet or suit, operated in positive pressure mode.
- Where the potential exists for exposures greater than 100 mg/m^3, use a full facepiece, self-contained breathing apparatus operated in positive pressure mode.

Handling and Storage

- Lead must be stored to avoid contact with oxidizing agents (such as perchlorates, peroxides, permanganates, chlorates, nitrates, chlorine, bromine and fluorine), and strong acids (such as hydrochloric, sulfuric and nitric acids), since reactions can occur.

Spills and Emergencies

- Most environmental emergencies involve spills of hazardous materials that must be reported to the Department of Natural Resources through a 24-hour hotline (573-634-2436). When reporting a spill, callers can also obtain technical assistance regarding response, containment and cleanup of hazardous materials.
- Restrict persons not wearing protective equipment from areas of spills until cleanup is complete.

* mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

- Ventilate the area of the spill.
- Collect powdered material in the most convenient and safe manner and deposit it in sealed containers.

Disposal Methods

- Lead oxide – chemical conversion to the sulfide or carbonate, followed by collection of the precipitate and lead recovery via smelting operations. Lead should be disposed of only by trained professionals.

Fire Extinguishing

- Use dry chemical or CO_2 extinguishers. DO NOT USE WATER.

Emergency First Aid Measures

Eye Contact

- Immediately flush with large amounts of water. Continue for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact

- Remove contaminated clothing. Wash contaminated skin with soap and water.

Respiratory

- Remove the victim from the site of the release.
- Begin rescue breathing if breathing has stopped, and CPR if heart activity has stopped.
- Transfer the victim promptly to a medical facility.

For more information on the Missouri HSEES program, visit the web site at www.dhss.state.mo.us/hsees or contact the HSEES Coordinator at 573-526-1686.

Information for this fact sheet was obtained from the Missouri HSEES Program Five-Year Data Analysis; the Environmental Protection Agency (EPA); the Agency for Toxic Substances and Disease Registry (ATSDR); and the Handbook of Toxic and Hazardous Chemicals and Carcinogens, Third Edition.

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